UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
BIN C15700
Seattle, WA 98115-0070

NMFS Tracking
No. 2003/00616

September 19, 2003

Glenn M. Hoffman
District Ranger
U.S. Department of Agriculture
Forest Service
600 Sherbourne
Leavenworth, Washington 98826

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Sand and Little Camas Creek culvert replacement projects in the Mission Creek watershed. (WRIA 45).

Dear Mr. Hoffman:

In accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended, 16 USC 1531, *et seq*. and the Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996, 16 USC 1855, the attached document transmits the NOAA's National Marine Fisheries Service (NOAA Fisheries) Biological Opinion (Opinion) and Essential Fish Habitat (EFH) consultation on the proposed Sand and Little Camas Creek culvert replacement in Chelan County, Washington.

The United States Forest Service (Forest Service) determined that the proposed action is likely to adversely affect the Upper Columbia River steelhead (*Oncorhynchus mykiss*) Evolutionarily Significant Unit (ESU). Formal consultation was initiated on May 22, 2003. The Opinion reflects the formal consultation and an analysis of effects covering the above listed species in the Columbia River above Wells Dam and below Chief Joseph Dam, Washington. The Opinion is based on information provided in the biological assessment received by NOAA Fisheries on May 19, 2003, and subsequent information transmitted by telephone conversations, fax, and electronic mail. A complete administrative record of this consultation is on file at the Washington State Habitat Branch Office.

NOAA Fisheries concludes that the implementation of the proposed project is not likely to jeopardize the continued existence of the Upper Columbia River steelhead ESU. Please note that the incidental take statement, which includes reasonable and prudent measures and terms and conditions, was designed to minimize take resulting from the proposed action.

The Forest Service determined that EFH would be adversely affected by the proposed action. Through the MSA consultation, NOAA Fisheries concluded that the proposed project may adversely impact designated EFH for chinook and coho (*O. kisutch*) salmon. Specific Reasonable and Prudent Measures of the ESA consultation, and Terms and Conditions identified therein, would address the negative effects resulting from the proposed Forest Service actions. Therefore, NOAA Fisheries recommends that they be adopted as EFH conservation measures.

If you have any questions, please contact Debbie Spring of the Washington State Habitat Branch Office at (509) 962-8911 or email at debbie.spring@noaa.gov.

Sincerely,

for Michael R Course

D. Robert Lohn
Regional Administrator

Endangered Species Act - Section 7 Consultation
Biological Opinion

and

Magnuson-Stevens
Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Sand and Little Camas Creek Culvert Replacement Projects
Chelan County, Washington

NMFS Tracking No.: 2003/00616

Action Agency:	United States Department of Agriculture Forest Service
Consultation Conducted by:	National Marine Fisheries Service Northwest Region

Issued by: for Michael R Crouse Date Issued: September 19, 2003

D. Robert Lohn
Regional Administrator

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1.0 INTRODUCTION

This document is the product of an Endangered Species Act (ESA) section 7 formal consultation and Magnuson-Stevens Fishery Conservation and Management Act (MSA) Essential Fish Habitat (EFH) consultation between the NOAA's National Marine Fisheries Service (NOAA Fisheries) and the United States Department of Agriculture, Forest Service (FS) for the proposed replacement of three culverts on Sand and Little Camas Creeks in Chelan County, Washington. The proposed action would affect the Evolutionarily Significant Unit (ESU[1]) of the ESA listed endangered Upper Columbia River (UCR) steelhead (*Oncorhynchus mykiss*). In addition, the action area is designated as EFH for chinook (*O. tshawytscha*) and coho (*O. kisutch*) salmon.

The purpose of this document is to present NOAA Fisheries' Biological Opinion (Opinion) on whether the proposed action is likely to jeopardize the continued existence of the UCR steelhead ESU. Further, this document will determine if the proposed action will adversely affect designated coho and chinook salmon EFH. These ESA and EFH determinations are reached by analyzing the biological effects of the construction activities related to the culvert replacement, relating those effects to the biological and ecological needs of the listed species, and adding these effects to the environmental baseline of the action area, and factoring cumulative effects.

1.1 Background Information and Consultation History

The FS is proposing to fund a project within the Wenatchee National Forest to replace three culverts. Two of these are located on Sand Creek and the third is on Little Camas Creek. Both creeks are tributaries to Mission Creek, which enters the Wenatchee River at river mile 10.5, in Chelan County, Washington. The purposes of this project are to restore salmonid access to the upper portions of Sand and Little Camas Creeks and improve riparian habitat and stream conditions.

On May 19, 2003, NOAA Fisheries received from the FS a Biological Assessment (BA), and a request for both ESA section 7 formal consultation and EFH consultation to permit the replacement of the three culverts on Sand and Little Camas Creeks. Formal consultation was initiated on May 28, 2003.

1.2 Description of the Proposed Action

The FS proposes to replace three culverts with open bottom box culverts that are 1.2 times the bankfull width of the channel plus two feet. One of the Sand Creek culverts is located at road mile 0.9 on FS road 7104. The second Sand Creek culvert is located at road mile 1.24 on FS road 7104. The last culvert, located on Little Camas Creek, is at road mile 2.35 on FS road 7104.

"ESU" means a population or group of populations that is considered distinct (and hence a "species") for purposes of conservation under the ESA. To qualify as an ESU, a population must (1) be reproductively isolated from other conspecific populations, and (2) represent an important component in the evolutionary legacy of the biological species (Waples 1991).

The open bottom arched culverts will replace culverts that impede fish passage. The new structures will partially restore natural channel processes and pass 100-year flood events. Each culvert replacement may include the following: removing vegetation; installing sedimentation reduction devices; constructing a stream bypass channel; excavating and removing the old culvert; diverting the stream into a bypass channel; herding and removing fish from the project area; excavating the stream channel; constructing an open bottom arched culvert; diverting the stream back into the main channel; reconstructing the road, revegetating with native plants and shrubs; and implementing other measures designed to minimize impacts to salmonids.

The FS has proposed the following conservation measures or Best Management Practices (BMPs) to minimize or avoid negative effects to listed salmonids. These conservation measures will be required elements of each proposed project, and the analysis in the Opinion assumes the measures will be implemented as described.

1.2.1 General Conservation Measures:

- The FS will notify District and NOAA Fisheries biologists prior to construction for each project.

- The FS will notify District and NOAA Fisheries biologists two days before isolating the work area from flow.

- Disturbance of stream channels will be minimized and will be restored to the natural configuration at completion of the project.

- The project work window will be from late July through early August to avoid spawning and incubation periods for UCR steelhead.

1.2.2 Bypass Channel Conservation Measures:

- Prior to any work activity, the contractor will secure a block seine above the culvert to exclude fish. Fish will then be gently herded downstream out of the construction area and once downstream, a second block seine will be placed to prevent fish from returning to the construction area.

- Stream bypass channels will be constructed to temporarily dewater crossings so the existing culverts can be excavated and removed. The bed excavations and culvert installations will be completed in dry channel conditions. The bypass channels will be lined with plastic, riprap, or an equally suitable material to prevent erosion of the channels. The bypass channel liner will extend at least one-foot beyond the top of the channel berm to ensure that sediment does not enter the channel.

- A temporary bypass to divert flow around the work area shall be in place prior to initiation of other work in the wetted perimeter.

- A sandbag revetment or similar device shall be installed at the bypass inlet to divert the entire flow through the bypass.

- A sandbag revetment or similar device shall be installed at the downstream end of the bypass to prevent backwater from entering work area.

- The bypass shall be of sufficient size to pass all flows and debris for the duration of the project.

- Prior to releasing the water flow to the project area, all bank protection and armoring shall be completed.

- Upon completion of the project, all material used in the temporary bypass shall be removed from the site and the site returned to preproject or improved conditions.

- All installations will utilize the existing streambed as much as possible.

- The stream will be returned to the new crossing when the original channel work has been completed.

- By the end of the project, most of the bypass channel will be covered by the road prism. The remaining portion will be restored.

1.2.3 Culvert Removal and Open Bottom Arch Installation Conservation Measures

- The use of equipment in streams will be held to a minimum. Care will be taken to ensure equipment working in or adjacent to streams does not leak hydraulic fluid or fuel. All refueling of equipment will be conducted away from streams. Hazardous material kits and a hazardous materials spill plan will be on site at all times.

- The new open-bottom arched culverts will maintain the natural stream gradient. The skew of the arch will be set in such a manner that habitat and channel length are maintained.

- If the main channel cannot be completely de-watered, sediment fences must be installed along the edges of the channel to ensure that sediment does not enter the channel.

- Concrete footings for the arch base must be poured and cured without contact with water. Curing time generally takes one week. If the main channel cannot be completely de-watered, water must be pumped to ensure that it does not contact the footings. It must be pumped upslope onto a vegetated slope in such a manner that the water will not scour or

pool on the soil surface. When installed, the footings will be buried sufficiently deep so they will not be exposed to scour.

- To slow the velocity of the stream through the new structure and provide resting sites for fish, the open bottom arch floors will be finished with material excavated from the footings, or suitable riprap. The floors of the crossings will be configured so that fish passage will be unimpeded at all flow levels.

- The finished road fill slopes at each crossing inlet and outlet will be armored with riprap. The completed roadbed will have a crushed aggregate surface.

1.2.4 Restoration Measures:

- All disturbed sites will be hydro-seeded and mulched when the project is complete. The Okanogan National Forest seed mix designed for erosion control and discouragement of animal grazing will be used. Native plants and shrubs will be planted along disturbed stream banks in the fall or spring following culvert replacement completion.

1.3 Description of the Action Area

The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). The action area for each culvert replacement extends upstream to the farthest extent of salmonid migration, since the result of the action will be to allow salmon upstream passage to that point. The precise downstream limit of the action area cannot be easily determined because the extent of the effects of the proposed action would vary according to flow stage. However, the project will be constructed during the summer, when flows are likely to be very low. The main downstream effect of turbidity should be negligible at the confluence of each creek with the Mission Creek, thus, Mission Creek is the downstream limit of the action area. The action area also includes the adjacent riparian zone within the construction area and all areas affected by the project including any staging areas and roadways.

2.0 ENDANGERED SPECIES ACT BIOLOGICAL OPINION

2.1 Evaluating Proposed Actions

The purpose of consultation under the ESA is to ensure that Federal actions are not likely to jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of designated critical habitat (16 U.S.C. 1536(a)(2)). Critical habitat is not currently designated for UCR steelhead, thus no analysis on critical habitat will appear in this document. The standards for determining jeopardy as set forth in section 7(a)(2) of the ESA are defined by 50 CFR part 402 (the consultation regulations). This analysis

involves the initial steps of (1) defining the biological requirements of the listed species and (2) evaluating the relevance of the environmental baseline to the species' current status.

From that, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries considers estimated levels of injury and mortality attributed to: (1) collective effects of the proposed or continuing action; (2) the environmental baseline; and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmonid's life stages that occur beyond the action area. If NOAA Fisheries finds that the action is likely to jeopardize, NOAA Fisheries must identify reasonable and prudent alternatives for the action.

2.1.1 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying ESA section 7(a)(2) to listed salmon is to define the species' biological requirements, and identify those that are most relevant to each consultation. The biological requirements are those conditions necessary for the listed species to survive and recover to naturally reproducing population levels at which time protection under the ESA would be unnecessary. Species or ESUs not requiring ESA protection have the following attributes: population sizes large enough to maintain genetic diversity and heterogeneity; the ability to adapt to and survive environmental variation; and the ability to be self-sustaining in the natural environment.

The basic biological requirements of UCR steelhead include adequate food, flowing water (quantity), high quality water (cool, free of pollutants, high dissolved oxygen concentrations, low sediment content), clean spawning substrate, and unimpeded migratory access to and from spawning and rearing areas (adapted from Spence *et al.* 1996). The specific biological requirements affected by the proposed action include water quality, food, and unimpeded migratory access.

2.1.2 Environmental Baseline

The environmental baseline represents the current set of conditions to which the effects of the proposed action would be added. The term "environmental baseline" means "the past and present impacts of all Federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process" (50 CFR 402.02).

The most recent evaluation of the environmental baseline for the Columbia River is part of the NOAA Fisheries' Opinion for the Federal Columbia River Power System (FCRPS) issued in December 2000. That Opinion assessed the entire Columbia River system below Chief Joseph Dam, and downstream to the farthest point at which ESA-listed salmonids are influenced (the Columbia River estuary and nearshore ocean environment). A detailed evaluation of the

environmental baseline of the Columbia River basin can be found in the FCRPS Opinion (NMFS 2000).

Mission Creek flows approximately 18 miles from its headwaters high in the Cascades to its confluence with the Wenatchee River at the city of Cashmere in central Washington. The basin drains an area of 93.3 square miles, mostly within the Wenatchee National Forest. Land use in the lower basin is largely orchards with some rural and urban residential areas near the mouth. Although it contributes only two percent of the Wenatchee River flow, Mission Creek was rated as the most polluted water body in the Wenatchee River watershed during a ranking process for the 1998 Wenatchee River Watershed Action Plan (WRWSC, 1998). Water quality problems in the Mission Creek basin include excessive fecal coliform bacteria, elevated temperatures, low dissolved oxygen, inadequate instream flow, and pesticides.

The Mission Creek watershed includes Mission Creek, Sand Creek, Little Camas, Devils Gulch, and Yaxsum Canyon. Of these, Mission, Sand, Little Camas, and Devils Gulch are the fish bearing drainages in the National Forest. In most of the Mission Creek watershed, the highly erosive soils contribute to the high fine sediment loads within stream channels. The sandstone bedrock is overlain with a thin mantle of highly erosive soil. The soft parent material combined with steep topography is responsible for the high fine sediment delivery rates. Combined with these factors are the residual effects of extensive grazing that occurred in a majority of the watershed in the 1930's.

Heavy fine sediment loads are suspected to be moving substrate conditions outside the range of natural variability. The effects of high sediment loads are exacerbated by the loss of channel-influencing large wood pieces, and channel constrainment. These in turn have led to loss of floodplain connectivity, and the resultant aggradation and degradation within the channel. The two main areas where the majority of the natural sediment production occurs within the watershed are upper Devils Gulch as influenced by Mt. Lillian, and Little Camas Creek. Roads on FS Lands constraining Mission, Sand and Little Camas Creeks have caused loss of floodplain connectivity. Road containment also elevates sediment input because road conditions increase impermeable surfaces and drain directly to streams. Private roads and timber harvest within section 35, T22N, R19E, likely also contribute to unnaturally high sediment loads.

The majority of the existing channel forms within the watershed are stable (Rosgen type A and B) and therefore are unlikely to change laterally, but will change vertically depending on the amount and timing of sediment inputs. This can be observed along the mainstems of Mission, Devils Gulch, East Fork, Sand, and Little Camas Creeks, where the current channel has abandoned the floodplain, indicating that the channel is, or has recently been downcutting. Width to depth ratios for most mainstems are low for bank full at floodprone and top-of-bank flows because of entrenchment. This also indicates that most floodplains are stranded. When high flows occur, excessive bank cutting is likely. Channel banks tend to be relatively unstable due to the amount of fine material comprising the banks.

Sand Creek is one of three streams that drain the dry and arid northeast face of Tronsen Ridge. The drainage is located in the south central portion of the Leavenworth Ranger District. Its 7,700 acre watershed is pinnately structured and oriented in a south to north to west fashion. Tronsen Ridge is made up of swauk sandstone which is very erosive. The valley form of the watershed is typically narrow V-shaped and valley floor widths range between 250 feet to less than 100 feet. Valley side slopes average 65%, but are as steep as 85% in many places. Bare sandstone bluffs and outcroppings are common features throughout the arid watershed. The erodible nature of the main landform in the watershed results in a high amount of bedload being moved by Sand Creek.

2.1.2.1 Factors Affecting the Species at the Population Scale

In previous Opinions, NOAA Fisheries assessed life history, habitat and hydrology, hatchery influence, and population trends in analyzing the effects of the underlying action on affected species at the population scale (see, for example, FCRPS, NMFS 2000). A thumbnail description of each of these factors for the ESU covered under this consultation is provided below.

2.1.2.1.1 Life History. As in other inland ESUs (the Snake and mid-Columbia River basins), steelhead in the UCR ESU remain in freshwater up to a year before spawning. Smolt age is dominated by two year olds. Based on limited data, steelhead from the Wenatchee and Entiat rivers return to freshwater after one year in salt water, whereas Methow River steelhead are primarily age-2-ocean (Howell *et al.* 1985). Life history characteristics for UCR steelhead are similar to those of other inland steelhead ESUs; however, some of the oldest smolt ages for steelhead, up to seven years, are reported from this ESU (Mullan *et al.* 1992). The relationship between anadromous and nonanadromous forms in the geographic area are unclear.

2.1.2.1.2 Steelhead Habitat and Hydrology. The Chief Joseph and Grand Coulee Dam construction caused blockages of substantial habitat, as did that of smaller dams on tributary rivers. Habitat issues for this ESU relate mostly to irrigation diversions and hydroelectric dams, as well as to degraded riparian and instream habitat from urbanization and livestock grazing.

2.1.2.1.3 Hatchery Influence. Hatchery fish are widespread and escape to spawn naturally throughout the region. Spawning escapement is dominated by hatchery-produced fish.

2.1.2.1.4 Upper Columbia River Steelhead Population Trends and Risks. For the UCR steelhead ESU as a whole, NOAA Fisheries estimates that the median population growth rate (lambda) over the base period ranges from 0.94 to 0.66, decreasing as the effectiveness of hatchery fish spawning in the wild increases compared to that of fish of wild origin (Tables B-2a and B-2b in McClure *et al.* 2000). NOAA Fisheries has also estimated the risk of absolute extinction for the aggregate UCR steelhead population, using the same range of assumptions about the relative effectiveness of hatchery fish. At the low end, assuming that hatchery fish spawning in the wild have not reproduced (*i.e.*, hatchery effectiveness equals zero), the risk of absolute extinction within 100 years is 0.25 (Table B-5 in McClure *et al.* 2000). Assuming that

the hatchery fish spawning in the wild have been as productive as wild-origin fish (hatchery effectiveness equals 100%), the risk of absolute extinction within 100 years is 1.00 (Table B-6 in McClure *et al.* 2000). Because of data limitations, the Quantitative Analysis Report (QAR) steelhead assessments in Cooney (2000) were limited to two aggregate spawning groups-the Wenatchee/Entiat composite and the above-Wells populations. Wild production of steelhead above Wells Dam was assumed to be limited to the Methow system. Assuming a relative effectiveness of hatchery spawners of 1.0, the risk of absolute extinction within 100 years for UCR steelhead is 100%. The QAR also assumed hatchery effectiveness values of 0.25 and 0.75. A hatchery effectiveness of 0.25 resulted in projected risks of extinction of 35% for the Wenatchee/Entiat and 28% for the Methow populations. At a hatchery effectiveness of 0.75, risks of 100% were projected for both populations.

2.1.2.2 Factors Affecting the Species within the Action Area

Section 4(a)(1) of the ESA and NOAA Fisheries listing regulations (50 CFR 424) set forth procedures for listing species. The Secretary of Commerce must determine, through the regulatory process, if a species is endangered or threatened based upon any one or a combination of the following factors: (1) the present or threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; or (5) other natural or human-made factors affecting its continued existence.

The proposed action includes activities that will have some level of effects with short-term impacts from category (1) in the above paragraph, and the potential for long-term impacts as described in category (5). The characterization of these effects and a conclusion relating the effects to the continued existence of the listed salmon and steelhead that are the subject of this consultation is provided below, in section 2.2.

The major factor affecting UCR steelhead within the action area is land use. NOAA Fisheries uses the Matrix of Pathways and Indicators (MPI) to analyze and describe the effects of these factors on listed salmon and steelhead. The MPI relates the biological requirements of listed species to a suite of habitat variables. In the analysis presented here, each factor is considered in terms of its effect on relevant pathways and associated indicators (*properly functioning, at risk, or not properly functioning*).

Numerous anthropogenic features and/or activities (*e.g.,* forestry, livestock, roads, rip-rap, and landscaping) in the action area, have become permanent fixtures on the landscape and have displaced and altered native riparian habitat to some degree. Consequently, the potential for normal riparian processes (*e.g*., shading, bank stabilization, and Large Woody Debris (LWD) recruitment) to occur is diminished, and aquatic habitat has become simplified (Ralph *et al.* 1994; Young *et al.* 1994; Fausch *et al.* 1994; Dykaar and Wigington 2000).

2.1.3 Status of the Species

NOAA Fisheries considers the current status of the listed species taking into account population size, trends, distribution, and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its original decision to list the species for protection under the ESA. In addition, the assessment will consider any new information or data that are relevant to the determination.

The listing status, biological information, and Critical Habitat elements, or potential Critical Habitat for the NOAA Fisheries listed species that are the subject of this consultation are described below in Table 1.

Species	Listing Status	Critical Habitat	Protective Regulations	Biological Information
Upper Columbia River steelhead	August 18, 1997; 62 FR 43937, Endangered	Not Designated[2]	July 10, 2000; 65 FR 42422	Busby *et al.* 1995; 1996

Table 1. References for Additional Background on Listing Status, Biological Information, and Critical Habitat Elements for the Listed Species Addressed in this Opinion.

Throughout the Columbia Basin, salmonids have been negatively affected by a combination of habitat alteration and hatchery management practices. Mainstem dams on the Columbia River, are perhaps the most significant source of habitat degradation for the ESUs addressed under this consultation. The dams act as a partial barrier to passage, kill out-migrating smolts in their turbines, raise temperatures throughout the river system, and have created lentic refugia for salmonid predators. In addition to dams, irrigation systems have had a major negative impact by diverting large quantities of water, stranding fish, acting as barriers to passage, and returning effluents containing chemicals and fine sediments. Other major habitat degradation has occurred through urbanization and livestock grazing practices (WDFW *et al.* 1993; Busby *et al.* 1996; NMFS 1996; 1998; 2000; April 22, 1992, 64 FR 14308; August 18, 1997, 62 FR 43937).

Habitat alterations and differential habitat availability (*e.g.*, fluctuating discharge levels) impose an upper limit on the production of naturally spawning populations of salmon and steelhead. The National Research Council Committee on Protection and Management of Pacific Northwest Anadromous Salmonids identified habitat problems as a primary cause of declines in wild salmon runs (NRCC 1996). Some of the habitat impacts identified were the fragmentation and loss of available spawning and rearing habitat, migration delays, degradation of water quality, removal of riparian vegetation, decline of habitat complexity, alteration of stream flows and streambank and channel morphology, alteration of ambient stream water temperatures,

[2]Under development. On April 30, 2002, the U.S. District Court for the District of Columbia approved a NOAA Fisheries consent decree withdrawing a February 2000 Critical Habitat designation for this and 18 other ESUs.

sedimentation, and loss of spawning gravel, pool habitat, and LWD (NMFS 1996a; 1998; NRCC 1996; Bishop and Morgan 1996).

Hatchery management practices are suspected to be a major factor in the decline of these ESUs. The genetic contribution of non-indigenous, hatchery stocks may have reduced the fitness of the locally adapted native fish through hybridization and associated reductions in genetic variation or introduction of deleterious (non-adapted) genes. Hatchery fish can also directly displace natural spawning populations, compete for food resources, or engage in agonistic interactions (Campton and Johnston 1985; Waples *et al.* 1991; Hilborn 1992; NMFS 1996; March 10, 1998, 63 FR 11798).

The following information summarizes the status of the Columbia River salmonids that are the subjects of this consultation. Most of this narrative was largely taken from the Opinion on Reinitiation of Consultation on Operation of the Federal Columbia River Power System (FCRPS), including the Juvenile Fish Transportation Program, and 19 Bureau of Reclamation Projects in the Columbia Basin (NMFS 2000).

2.1.3.1 Upper Columbia River Steelhead

The UCR steelhead ESU, listed as endangered on August 18, 1997 (62 FR 43937), includes all natural-origin populations of steelhead in the Columbia River basin upstream from the Yakima River in Washington, to the U.S./Canada border. The Wells Hatchery stock is included among the listed populations. Critical habitat is not presently designated for UCR steelhead, although a designation is forthcoming (see footnote 2).

Estimates of historical (pre-1960s) steelhead abundance specific to this ESU are available from fish counts at dams. Counts at Rock Island Dam from 1933 to 1959 averaged 2,600 to 3,700, suggesting a pre-fishery run size in excess of 5,000 adults for tributaries above Rock Island Dam (Chapman *et al.* 1994). Recent average total escapement for this stock was 2,400 (62 Fed. Reg. 43949; August 18, 1997). Steelhead in the Upper Columbia River ESU continue to exhibit low abundances, both in absolute numbers and in relation to numbers of hatchery fish throughout the region. Review of the most recent data indicates that natural steelhead abundance has declined or remained low and relatively constant in the major river basins in this ESU (Wenatchee, Methow, Okanogan) since the early 1990s (Busby *et al.* 1996). Estimates of natural production of steelhead in the ESU are well below replacement (approximately 0.3:1 adult replacement ratios estimated in the Wenatchee and Entiat rivers) (62 Fed. Reg. 43949; August 18, 1997).

These data indicate that natural steelhead populations in the Upper Columbia River Basin are not self-sustaining at the present time. There is also anecdotal evidence that resident rainbow trout contribute to anadromous run abundance. This phenomenon would reduce estimates of the natural steelhead replacement ratio (62 Fed. Reg. 43949; August 18, 1997). The primary cause for concern for UCR steelhead is the extremely low estimate of adult replacement rate. The dramatic declines in natural run sizes and inability of naturally spawning steelhead adults to

replace themselves suggest that if present trends continue, this ESU will not be viable (62 Fed. Reg. 43950; August 18, 1997).

2.2 Effects of the Proposed Action

The portion of Sand and Little Camas that flow through the action area provides breeding and juvenile rearing habitat for UCR steelhead, therefore listed fish are likely to be present during or post-construction, and will experience "effects of the action." NOAA Fisheries' ESA implementing regulations define "effects of the action" as "the direct and indirect effects of an action on the species together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline" (50 CFR 402.02). The analysis below will evaluate the level of exposure that listed fish will have to the project, and the range of effects that the listed fish will experience as a result of that exposure.

2.2.1 Direct Effects

Direct effects are the immediate effects of the project on the species or its habitat. Direct effects result from the agency action and include the effects of interrelated and interdependent actions. Future Federal actions that are not a direct effect of the action under consideration (and not included in the environmental baseline or treated as indirect effects) are not evaluated (USFWS and NMFS 1998).

2.2.1.1 Water Quality

Removal of the existing culvert and installation of a new arched culvert, and related activities associated with this project, could mobilize sediments and temporarily increase downstream turbidity levels. In the immediate vicinity of the construction area (several hundred feet), the level of turbidity would likely exceed ambient levels by a substantial margin and potentially affect UCR steelhead. Three specific activities that will mobilize sediments are diverting the stream to the bypass channel, excavating the stream channel, and diverting the stream back into the main channel. These activities will deliver short-term (hours to a few days) pulses of sediment downstream. However, the proposed action includes timing restrictions and Best Management Practices (BMPs) as measures to minimize the likelihood of exposing listed salmonids to sediments, and the duration or intensity of such exposure.

Quantifying turbidity levels, and their effect on fish, is complicated by several factors. First, turbidity from an activity will typically decrease as distance from the activity increases. How quickly turbidity levels attenuate depends on the quantity of materials in suspension (e.g., mass or volume), the particle size of suspended sediments, the amount and velocity of ambient water (dilution factor), and the physical/chemical properties of the sediments. Second, the impact of turbidity on fish is not only related to the turbidity levels, but also the particle size of the suspended sediments.

For salmonids, turbidity has been linked to a number of behavioral and physiological responses (*i.e.*, gill flaring, coughing, avoidance, increase in blood sugar levels) which indicate some level of stress (Bisson and Bilby 1982; Sigler *et al.* 1984; Berg and Northcote 1985; Servizi and Martens 1992). The magnitude of these stress responses are generally higher when turbidity is increased and particle size decreased (Bisson and Bilby 1982; Servizi and Martens 1987; Gregory and Northcote 1993). Although turbidity may cause stress, Gregory and Northcote (1993) have shown that moderate levels of turbidity (35-150 nephelometric turbidity units) accelerate foraging rates among juvenile chinook salmon, likely because of reduced vulnerability to predators (camouflaging effect).

NOAA Fisheries expects turbidity from the project will be short-lived and have a low potential for causing take, because of project measures to reduce or avoid turbidity impacts. The FS will install the new structures when listed species are least likely to be present near the project site, minimizing the number of fish that may be exposed to potential adverse effects. Those fish that are present in the action area when the effects are manifest are likely to be able to avoid the area until the effects dissipate, reducing the degree and/or duration of their exposure.

2.2.1.2 Streambed Disturbance

Culvert replacement would disturb the existing river substrate and require a small amount of bank disturbance, primarily during the bypass construction, the stream diversion into the bypass channel, and streambed alteration. NOAA Fisheries expects the direct effects to UCR steelhead as a function of streambed disturbance is expected to be minor. Because of the project work window, UCR steelhead life stages in the project area include juvenile and young-of-the-year fish that are resident in the water column and are able to evacuate the area when disturbance is initiated. The most significant effect would be the temporary loss (burial or displacement) of some potential prey species (invertebrates) and their habitat.

Invertebrates (e.g., larval insects, obligate aquatic insects, molluscs, crustaceans etc.) recolonize disturbed areas by drifting, crawling, swimming, or flying in from adjacent areas (Mackay 1992). The time required for new invertebrates to reach pre-disturbance abundance levels and equilibrium would be related to the spatial scale of their initial habitat loss, the persistence of the excluding or disturbing mechanism, the size of adjacent or remnant invertebrate populations (potential colonizers), the season in which the disturbance is taking place, and the life history characteristics of the invertebrate species (Mackay 1992).

Lost foraging opportunities resulting from the disturbance of bedforms will likely be short-lived as invertebrates will recolonize the disturbed substrate (Allan 1995). Long-term effects to prey abundance and habitat are not predicted because (1) limited excavation of each streambed is required, (2) the fall work window coincides with high levels of invertebrate activity (and therefore recolonization potential), and (3) following construction, new riverbed materials will resemble pre-disturbance habitat (i.e., benthic habitat will not be permanently displaced). The construction activities should not reduce the long-term functional quality of juvenile foraging habitat in the action area.

2.2.1.3 Removal of Riparian Vegetation

The culvert replacement will result in a temporary loss of riparian function caused by the removal of vegetation. Riparian vegetation links terrestrial and aquatic ecosystems, influences channel processes, contributes organic debris to streams, stabilizes streambanks, and modifies water temperatures (Gregory *et al.* 1993). Elevated water temperatures may adversely affect salmonid physiology, growth and development, alter life history patterns, induce disease, and may exacerbate competitive predator-prey interactions (Spence *et al.* 1996). The removal of existing riparian vegetation could adversely affect the action area. However under the proposed action, the loss of riparian function should be minimal because of the small footprint of each project. Temporary negative effects of these activities on UCR steelhead and aquatic habitat indicators will be limited by implementing construction methods and approaches included in the project design, BMP's outlined in the BA, and by following the terms and conditions in section 2.6.3 of this Opinion.

2.2.1.4 Diversion of Stream and Removal of Fish

When the FS diverts the stream into the bypass channel, it will impede salmonid movement, and may strand fry and juvenile steelhead. By dewatering gradually, the FS will enable fish to move with the receding water, which reduces the risk of stranding. Diverting the water will also cause the temporary loss (burial, dessication, and displacement) of macroinvertebrate habitat. Aquatic invertebrates serve as an important source of prey for salmonids, and the loss of their habitat through burial, dessication, or displacement may reduce foraging opportunities for listed salmonids. However, because new invertebrates tend to recolonize disturbed areas quickly, (Allan 1995) the reduction in available food source would be short-term. In the action area, recolonization rates are expected to be rapid due to the small size of the disturbance and relatively short time period of construction activities.

The FS will remove fish from the construction area by (developed from Regional Road Maintenance Technical Working Group, 2000): (1) installing a block net at the upstream terminus of the construction area; (2) then dragging a seine through the entire construction area, beginning at the upstream block net; and (3) installing a second block net at the downstream terminus of the construction area. If listed fish are stranded between the block nets, they will be removed by hand or with dip nets, placed in buckets, and released downstream of the construction area.

2.2.2 Indirect Effects

Indirect effects are caused by or result from the proposed action, are later in time, and are reasonably certain to occur. Indirect effects may occur outside of the area directly affected by the action. Indirect effects might include other Federal actions that have not undergone section 7 consultation but will result from the action under consideration. These actions must be reasonably certain to occur, or be a logical extension of the proposed action (50 CFR 402.02.)

2.2.2.1 Riparian and Fisheries Habitat

The culvert replacement will cause minor short-term loss of riparian function by the removal of vegetation. This loss of functions might include reduced shading and organic matter inputs to the stream. However because of the small footprint of the project, few, if any, large trees will need to be removed. Therefore, LWD recruitment is not expected to be significantly reduced by the proposed project. Vegetation loss will be mitigated by seeding with native plant stock and riparian planting that will provide additional long-term cover for fish. The negative effects of these culvert replacement activities on UCR steelhead, and aquatic habitat indicators will be limited by implementing construction methods and approaches included in the project design, BMPs, and by following the terms and conditions in section 2.6.3 of this Opinion.

2.2.2.2 Construction Equipment

As with all construction activities, accidental release of fuel, oil, and other contaminants may occur. These contaminants could injure or kill aquatic organisms if spilled into a water body or the adjacent riparian zone. However, all equipment fueling and maintenance would occur in designated staging areas at least 150 feet from the stream channel, reducing the likelihood of contaminants reaching open water, if a spill were to occur.

2.2.2.3 Population Scale Effects

As detailed in section 2.1.3.1, NOAA Fisheries has estimated the median population growth rate (lambda) for the species affected by the Sand and Little Camas Culvert Project. For the steelhead ESU, life history diversity has been limited by the influence of hatchery fish, by physical barriers that prevent migration to historical spawning and/or rearing areas, and by water temperature barriers that influence the timing of emergence, juvenile growth rates, or the timing of upstream or downstream migration. In addition, hydropower development has profoundly altered the riverine environment and those habitats vital to the survival and recovery of the ESU that is the subject of this consultation.

Construction of the culverts in Sand and Little Camas Creeks will result in short-term impacts to listed salmonids. Conservation measures and BMPs are expected to reduce the potential for harm to listed fish through increased turbidity, streambed and bank disturbance, and fish removal. The action will negatively affect listed salmonids in the action area, but is not expected to be significant at the ESU scale for UCR steelhead.

2.3 Cumulative Effects

Cumulative effects are defined as "those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation" (50 CFR 402.02). Future Federal actions that are unrelated to the proposed actions are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

In the action area for this project, agricultural activities and forest management activities are the main land uses. Downstream of the project area, urbanization and heavy agricultural water withdrawals occur causing a migration barrier during low flow season. Riparian buffers are not properly functioning, containing little woody vegetation. Although land use practices that would result in take of endangered species is prohibited by section 9 of the ESA, such actions do occur. NOAA Fisheries cannot conclude with certainty that any particular riparian habitat will be modified to such an extent that take will occur. Riparian habitat is essential to salmonids in providing and maintaining various stream characteristics such as; channel stabilization and morphology, leaf litter, and shade. Given the patterns of riparian development in the action area and the rapid human population growth of Chelan County, (18.6% from 1990-2000, U.S. Census Bureau), it is reasonably certain that some riparian habitat will be impacted in the future by non-Federal activities. However, with newer, efficiency-improved irrigation practices, minimizing water withdrawal could lead to improving summer flows sufficiently to allow for UCR spring chinook passage. Furthermore, the state is engaged, through the Departments of Ecology and Fish and Wildlife in programs to improve in-stream flows in places like Mission Creek.

2.4 Conclusion/Opinion

NOAA Fisheries has reviewed the direct, indirect, effects of the proposed action on the above listed species and their habitat. NOAA Fisheries evaluated these effects in light of effects from existing conditions in the action area, cumulative effects, and factored the measures included in the action to minimize the effects. While the proposed action is likely to cause short-term adverse effects on listed salmonids by modifying habitat and construction activities, these effects are unlikely to reduce salmonid distribution, reproduction, or numbers in any meaningful way. Consequently, the proposed action is not likely to jeopardize the continued existence of listed UCR steelhead.

2.5 Reinitiation of Consultation

This concludes formal consultation for the Sand and Little Camas Culvert Replacement Project. Consultation must be reinitiated if: (1) the amount or extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded; (2) new information reveals effects of the action may affect listed species in a way not previously considered; (3) the action is modified in a way that causes an effect on listed species that was not previously considered; or (4) a new species is listed (50 CFR 402.16).

If the FS exceeds the described amount of habitat alteration temporally or spatially, or fails to use the conservation measures it has described in its biological assessment, the project would affect UCR steelhead in a manner not previously considered, requiring reinitiation of consultation. To reinitiate consultation, the FS should contact the Habitat Conservation Division (Washington Branch Office) of NOAA Fisheries. Upon reinitiation, the protection provided by this incidental take statement, section 7(o)(2), becomes invalid.

2.6 Incidental Take Statement

Section 9 of the ESA (16 U.S.C. 1538) prohibits take of endangered species. Federal regulation pursuant to section 4(d) of the ESA extends the prohibition to threatened species. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Harm is further defined as significant habitat modification or degradation that results in death or injury to listed species by "significantly impairing behavioral patterns such as breeding, spawning, rearing, migrating, feeding, and sheltering" (50 CFR 222.102). Harass is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering" (50 CFR 222.102).

Incidental take is take that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Section 7(o)(2), exempts from the prohibition incidental taking that is in compliance with the terms and conditions specified in the section 7 (b)(4) incidental take statement (16 U.S.C. 1536). An incidental take statement specifies the impact of any incidental taking of endangered or threatened species, provides reasonable and prudent measures (RPMs) that are necessary to minimize the impact of such take, and sets forth terms and conditions with which the action agency must comply to implement the reasonable and prudent measures.

2.6.1 Amount or Extent of Take Anticipated

As stated in section 2.1.3 above, UCR steelhead use the action area for spawning and rearing during part of the year and will likely encounter some effects of the proposed action. Therefore, incidental take of these listed fish is reasonably certain to occur, despite the fact that the proposed action includes measures to reduce the likelihood and amount of incidental take. To ensure the action agency understands these measures are mandatory, take minimization measures included as part of the proposed action are restated in the Terms and Conditions provided below.

Take is likely to be in the form of injury caused during construction and the activities used to move fish during work site isolation, and in the form of harm from other habitat affecting activities. Because the fish presence is highly variable both numerically and temporally, NOAA Fisheries cannot estimate a specific amount of incidental take of listed fish that will result from the project, despite the use of the best scientific and commercial data available. As a surrogate for estimating the number of fish taken by the proposed action, NOAA Fisheries has estimated the extent of habitat affected by those activities. The estimated extent of habitat affected from the construction activities (e.g., sediment mobilization, stream dewatering, and short-term loss of riparian habitat) also serve as the thresholds for reinitiating consultation.

For water quality effects, take is exempted for turbidity increases within 100 feet downstream of the project work-site (for flows up to 10 cfs, expected flows should be around 3-5 cfs). Take is also exempted for work-site isolation and temporary diversion of up to 80 feet of Sand and Little

Camas Creeks, and for riparian vegetation removal along 125 feet of either side of the creek channel. Should any of these limits be exceeded during project activities, the reinitiation provisions of this Opinion apply.

2.6.2 Reasonable and Prudent Measures

The measures described below are non-discretionary. They must be implemented through Federal agency, its applicant, or both, complying with the terms and conditions in order for the exemption in section 7(a)(2) to apply. The Forest Service has the continuing duty to regulate the activities covered in this incidental take statement. If the FS fails to adhere to the terms and conditions of the incidental take statement, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) will lapse.

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to minimize the take of ESA-listed fish that will result from the proposed Federal action.

1. The FS shall minimize the incidental take from in-water construction activities in Sand and Little Camas Creeks.

2. The FS shall minimize incidental take from changes in water quality.

3. The FS shall minimize the incidental take from effects on riparian and instream habitat.

2.6.3 Terms and Conditions

To comply with ESA section 7(b)(4), and be exempt from the prohibitions of section 9 of the ESA, the FS must comply with the following terms and conditions, which implement the reasonable and prudent measures, above. These Terms and Conditions largely reflect measures described as part of the proposed action in the BA. NOAA Fisheries has included them here to ensure that the action agency is aware that they are non-discretionary.

To implement RPM No.1 (in-water construction) above, the FS shall ensure that:

1.1 All work within the active channel of Sand and Little Camas will be completed between July 15, 2003 and August 31, 2003. Any extension of the in-water work period will first be approved by, and coordinated with, NOAA Fisheries.

1.2 All in-water work will be isolated by a cofferdam (sand bags), or the stream shall be routed through a culvert, to minimize the potential for sediment entrainment. If a cofferdam is used, any fish trapped in the isolation pool will be removed prior to dewatering, using NOAA Fisheries approved methods.

1.2.1 If seining is possible, fish will be captured under the supervision of a fishery biologist experienced in such efforts and all staff working with the seining operation must have the necessary knowledge, skills, and abilities to ensure the safe handling of all ESA-listed fish.

1.2.2 If seining is not possible, fish may be captured using electrofishing gear as described in NOAA Fisheries guidelines (NMFS 2000). No electrofishing may occur if water temperatures exceed 18° C, or are expected to rise above this temperature before concluding the capture.

1.2.3 Listed fish must be handled with extreme care, and kept in water to the maximum extent possible during capture and transfer procedures. The transfer of ESA-listed fish must be conducted using a sanctuary net that holds water during transfer, whenever necessary to prevent the added stress of an out-of-water transfer.

1.2.4 ESA-listed fish will not be marked or anaesthetized.

1.2.5 Captured fish must be released in appropriate habitat, as near as possible to the capture site.

To implement RPM No. 2 (water quality), the FS shall ensure that all erosion and pollution control measures included in the BA are included as special provisions in the Sand and Little Camas culvert replacement contract.

2.1 Effective erosion control measures shall be in-place at all times during the construction. Construction within the project vicinity will not begin until all temporary erosion controls (e.g., sediment barriers and containment curtains) are in place.

2.2 All exposed areas will be replanted with a native seed mix within 14 days of completion of construction.

2.3 Measures will be taken to prevent construction debris from falling into any aquatic habitat. Any material that falls into a stream during construction operations will be removed in a manner that has a minimum impact on the streambed and water quality.

2.4 The contractor will develop an adequate, site-specific Spill Prevention and Countermeasure or Pollution Control Plan (PCP), and is responsible for containment and removal of any toxicants released. The contractor will be monitored by the FS to ensure compliance with this PCP. The PCP shall include the following:

2.4.1 A site plan and narrative describing the methods of erosion/sediment control to be used to prevent erosion and sediment for contractor's operations related to disposal sites, borrow pit operations, haul roads, equipment storage sites, fueling operations, and staging areas.

2.4.2 Methods for confining and removing and disposing of excess construction materials, and measures for equipment washout facilities.

2.4.3 A spill containment and control plan that includes: Notification procedures; specific containment and clean up measures which will be available on site; proposed methods for disposal of spilled materials; and employee training for spill containment.

2.4.4 Measures to be used to reduce and recycle hazardous and non-hazardous waste generated from the project, including the following: types of materials, estimated quantity, storage methods, and disposal methods.

2.4.5 The identity of the Erosion and Pollutant Control Manager, who shall also be designated as responsible for the management of the contractor's PCP.

2.5 Areas for fuel storage, refueling, and servicing of construction equipment and vehicles will be at least 150 feet from the stream channel, and all machinery fueling and maintenance will occur within a contained area. Overnight storage of vehicles and equipment must also occur in designated staging areas.

2.6 Equipment refueling and storage areas will have hydrologic function restored (e.g., ripping or subsoiling) in areas where it has been degraded by equipment staging.

2.7 During excavation, native streambed materials stockpiled for later use will be located above the two-year floodplain. These materials shall be kept covered in case of rain to prevent the material from mobilizing and reaching the stream.

To implement RPM No. 3 (riparian and instream habitat protection), the FS shall ensure that:

3.1 Alteration of native vegetation will be minimized. Where native vegetation will be altered, measures will be taken to ensure that roots are left intact, to reduce erosion while still allowing room to work. No protection of invasive exotic species (e.g. Himalayan blackberry) shall be made, although no chemical treatment of invasive species will be used.

3.2 Riparian vegetation removed will be replaced with a native seed mix, shrubs, and trees according to the revegetation plan in section 1.2.

3.0 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

3.1 Background

The MSA, as amended by the Sustainable Fisheries Act of 1996, established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Pursuant to the MSA:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (section 305(b)(2));

- NOAA Fisheries must provide conservation recommendations for any Federal or state action that would adversely affect EFH (section 305(b)(4)(A));

- Federal agencies must provide a detailed response in writing to NOAA Fisheries within 30 days after receiving EFH conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with NOAA Fisheries EFH conservation recommendations, the Federal agency must explain its reasons for not following the recommendations (section 305(b)(4)(B)).

The term "EFH" means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA section 3). For the purpose of interpreting this definition of EFH: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.10). Adverse effect means any impact which reduces quality and/or quantity of EFH, and may include direct (*e.g.*, contamination or physical disruption), indirect (*e.g.*, loss of prey or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

An EFH consultation with NOAA Fisheries is required regarding any Federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities.

The objectives of this EFH consultation are to determine whether the proposed action would adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH.

3.2 Identification of Essential Fish Habitat

Pursuant to the MSA, the Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Federally-managed Pacific salmon: chinook; coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC 1999), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the Pacific Coast Salmon Plan (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based, in part, on this information.

3.3 Proposed Actions

The proposed action and action area are detailed above in section 1.2 and 1.3 of this document. The action area includes habitats that have been designated as EFH for various life-history stages of chinook and coho salmon.

3.4 Effects of Proposed Action

As described in detail in section 2.2 of this document, the proposed action may result in short-term adverse effects to a variety of habitat parameters.

1. The proposed action will result in a temporary risk of contamination of waters through the accidental spill or leakage of petroleum products from heavy equipment.

2. The proposed action will result in a short-term degradation of water quality (turbidity) because of instream construction activities.

3. Temporary loss of aquatic insects (a prey base for listed fish) due to the physical loss of existing habitat at the structure placement sites and sedimentation of downstream habitat.

3.5 Conclusion

NOAA Fisheries concludes that the proposed action will adversely affect designated EFH for chinook and coho salmon.

3.6 Essential Fish Habitat Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations to Federal agencies regarding actions which may adversely affect EFH. While NOAA Fisheries understands that the conservation measures described in the BA will be implemented by the FS, it does not believe that these measures are sufficient to address the adverse impacts to EFH described above. NOAA Fisheries believes that the temporary loss

of prey organisms, head cutting and bedload transport during construction activities is already minimized, to the maximum extent practicable, by the conservation measures described in the BA and therefore has no additional conservation recommendations to reduce the loss of prey. To minimize the remaining adverse effects to designated EFH for Pacific salmon (contamination of waters, suspended sediment, and habitat alteration), NOAA Fisheries recommends that the FS implement the following measures to further minimize the potential adverse effects of the proposed project and conserve EFH:

1. To minimize the adverse effect of the temporary risk of contamination of waters through the accidental spill or leakage of petroleum products from heavy equipment:

    i. The contractor will develop an adequate, site-specific Spill Prevention and Countermeasure or Pollution Control Plan (PCP), and is responsible for containment and removal of any toxicants released. The contractor will be monitored by the FS to ensure compliance with this PCP. The PCP shall include the following:

        a. Methods for confining and removing and disposing of excess construction materials, and measures for equipment washout facilities.

        b. A spill containment and control plan that includes: Notification procedures; specific containment and clean up measures which will be available on site; proposed methods for disposal of spilled materials; and employee training for spill containment.

        c. Measures to be used to reduce and recycle hazardous and non-hazardous waste generated from the project, including the following: types of materials, estimated quantity, storage methods, and disposal methods.

        d. The identity of the Erosion and Pollutant Control Manager, who shall also be designated as responsible for the management of the contractor's PCP.

    ii. Areas for fuel storage, refueling, and servicing of construction equipment and vehicles will be at least 150 feet from the stream channel, and all machinery fueling and maintenance will occur within a contained area. Overnight storage of vehicles and equipment must also occur in designated staging areas.

    iii. Equipment refueling and storage areas will have hydrologic function restored (e.g., ripping or subsoiling) in areas where it has been degraded by equipment staging.

2. To minimize the adverse effects of the short-term degradation of water quality (turbidity) because of instream construction activities:

i. A site plan and narrative describing the methods of erosion/sediment control to be used to prevent erosion and sediment for contractor's operations related to disposal sites, borrow pit operations, haul roads, equipment storage sites, fueling operations, and staging areas.

ii. Effective erosion control measures shall be in-place at all times during the construction. Construction within the project vicinity will not begin until all temporary erosion controls (e.g., sediment barriers and containment curtains) are in place.

iii. All in-water work will be isolated by a cofferdam (sand bags), or the stream shall be routed through a culvert, to minimize the potential for sediment entrainment.

iv. All exposed areas will be replanted with a native seed mix within 14 days of completion of construction.

v. Measures will be taken to prevent construction debris from falling into any aquatic habitat. Any material that falls into a stream during construction operations will be removed in a manner that has a minimum impact on the streambed and water quality.

vi. During excavation, native streambed materials stockpiled for later use will be located above the two-year floodplain. These materials shall be kept covered in case of rain to prevent the material from mobilizing and reaching the stream.

3.7 Statutory Response Requirement

Pursuant to the MSA (section 305(b)(4)(B)) and 50 CFR 600.920(k), Federal agencies are required to provide a detailed written response to NOAA Fisheries' EFH conservation recommendations within 30 days of receipt of these recommendations. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. In the case of a response that is inconsistent with the EFH conservation recommendations, the response must explain the reasons for not following the recommendations, including the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

3.8 Supplemental Consultation

The FS must reinitiate EFH consultation with NOAA Fisheries if the proposed action is substantially revised in a manner that may adversely affect EFH, or if new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920(l)).

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